ANTIOXIDANT SUPPLEMENTATION TO SMOKERS

Objective

Most tobacco smokers do not quit smoking even when faced with conclusive evidence that smoking is hazardous to health. This research is designed to lessen the detrimental health effects of smoking - namely, pulmonary disease and lung cancer.

Background

Tobacco smoking has been implicated as a contributing factor in obstructive pulmonary diseases such as emphysema and chronic bronchitis as well as lung cancer. Oxidative damage to pulmonary tissue may result from free radicals and oxidants in the smoke, in addition to reactive oxygen species such as superoxide, singlet oxygen, hydrogen peroxide and hydroxy radicals generated by alveolar macrophages and polymorphonuclear leucocytes following smoking. Smoking is also known to produce increased levels of mutagens in smoker's urine. It is known that cigarette smoking produces lower concentrations of ascorbic acid Vitamin C) and carotenes (provitamin A), two of the bodies' antioxidant defense systems. Recently, it has been demonstrated that ascorbic acid supplementation decreased the urine mutagenicity of workers exposed to coal and coal tar.

In our laboratory, we have shown *in vitro* that various antioxidants such as Vitamins A, C, E, niacin, carotenes and inorganic nutrients such as selenium and zinc protect the red blood cell hydrogen peroxide-induced formation of free radicals.

Source: https://www.industrydocuments.ucsf.edu/docs/jqbc0000

Protocol

There will be two different human studies. The first will be to determine the effectiveness of a single dose of antioxidant (alone or in combination) in decreasing the rise of mutagens in the urine and free radicals in the plasma following smoking a single cigarette. A dose-response curve will be determined. The most promising antioxidant(s) will then be tested as supplements for smokers for a period of six months to determine the long-term protective effects. Plasma and urine will be tested periodically during this study.

Budget

Project Director, 12.5% of Salary	$4,099
Graduate Assistant, Full-time	10,000
Consumables	1,000
Indirect Costs (15% of total)	2,265
TOTAL	$17,364

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